



Complete Summary

TITLE

Acute myocardial infarction: percent of patients with documentation of low-density lipoprotein cholesterol (LDL-c) level in the hospital record or documentation that LDL-c testing was done during the hospital stay or is planned for after discharge.

SOURCE(S)

Specifications manual for national hospital inpatient quality measures, version 3.0c. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct 1. various p.

Measure Domain

PRIMARY MEASURE DOMAIN

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the [Measure Validity](#) page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure* is used to assess the percent of acute myocardial infarction (AMI) patients with documentation of low-density lipoprotein cholesterol (LDL-c) level in the hospital record or documentation that LDL-c testing was done during the hospital stay or is planned for after discharge.

*This is a Centers for Medicare & Medicaid Services (CMS) only measure.

RATIONALE

The reduction of low-density lipoprotein cholesterol (LDL-c) reduces mortality and morbidity in patients with coronary artery disease (CAD). Placebo-controlled trials demonstrate a 30 to 40% relative risk reduction in cardiovascular endpoints with

lipid-lowering therapy in a broad range of patients with established CAD (Collins, 2003 and Shephard, 2002). The National Cholesterol Education Panel and the American Academy of Cardiology/American Heart Association (ACC/AHA) recommend lipid screening and lipid lowering, particularly LDL-c reduction, in patients with CAD and hyperlipidemia (NCEP ATP III, 2001; Antman, 2004; and Smith, 2001). The ACC/AHA ST-Elevation Myocardial Infarction guidelines also recommend that lipid measurements should be performed or obtained from prior medical records for all patients (Antman, 2004). Despite the increasing evidence to support lipid testing to direct therapy, many eligible older patients hospitalized with AMI do not have measurements of their lipid levels performed (Foody, 2005).

PRIMARY CLINICAL COMPONENT

Acute myocardial infarction (AMI); low-density lipoprotein cholesterol (LDL-c) testing; low-density lipoprotein cholesterol (LDL-c) level

DENOMINATOR DESCRIPTION

Acute myocardial infarction (AMI) patients (see the related "Denominator Inclusions/Exclusions" field in the Complete Summary)

NUMERATOR DESCRIPTION

Acute myocardial infarction (AMI) patients with documentation of low-density lipoprotein cholesterol (LDL-c) level in the hospital record or documentation that LDL-c testing was done either during the hospital stay or is planned for after discharge

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE CRITERION OF QUALITY

- A clinical practice guideline or other peer-reviewed synthesis of the clinical evidence
- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

NATIONAL GUIDELINE CLEARINGHOUSE LINK

- [ACC/AHA 2007 guidelines for the management of patients with unstable angina/non ST-Elevation myocardial infarction.](#)
- [\(1\) ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines \(Committee to revise the 1999 guidelines for the Management of Acute Myocardial Infarction\). \(2\) 2007 focused update of the ACC/AHA 2004 guidelines for the management of patients with ST-elevation myocardial infarction. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines.](#)

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Overall poor quality for the performance measured
Use of this measure to improve performance

EVIDENCE SUPPORTING NEED FOR THE MEASURE

Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, Chavey WE 2nd, Fesmire FM, Hochman JS, Levin TN, Lincoff AM, Peterson ED, Theroux P, Wenger NK, Wright RS, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Antman EM, Halperin JL, Hunt SA, Krumholz HM, Kushner FG, Lytle BW, Nishimura R, Ornato JP, Page RL, Riegel B, American College of Cardiology, American Heart Association Task Force on Practice Guidelines (Writing Committee, American College of Emergency Physicians, Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, American Association of Cardiovascular and Pulmonary Rehabilitation, Society for Academic Emergency Medicine. ACC/AHA 2007 guidelines for the management of patients with unstable angina/non-ST-Elevation myocardial infarction: a report of the American College of Cardiology. J Am Coll Cardiol 2007 Aug 14;50(7):e1-e157. [957 references] [PubMed](#)

Antman EM, Anbe DT, Armstrong PW, Bates ER, Green LA, Hand M, Hochman JS, Krumholz HM, Kushner FG, Lamas GA, Mullany CJ, Ornato JP, Pearle DL, Sloan MA, Smith SC Jr. ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction. A report of the Am Coll of Cardiol/Am Heart Assoc Task Force on Practice Guidelines (Committee to revise the 1999 guidelines). Bethesda (MD): American College of Cardiology, American Heart Association; 2004. 211 p. [1398 references]

Collins R, Armitage J, Parish S, Sleight P, Peto R. MRC/BHF Heart Protection Study of cholesterol-lowering with simvastatin in 5963 people with diabetes: a randomised placebo-controlled trial. Lancet 2003 Jun 14;361(9374):2005-16. [PubMed](#)

Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive Summary of The Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, And Treatment of High Blood Cholesterol In Adults (Adult Treatment Panel III). JAMA 2001 May 16;285(19):2486-97. [PubMed](#)

Foody JM, Roe MT, Chen AY, Smith SC Jr, Brindis RG, Peterson ED, Gibler WB, Ohman EM, CRUSADE Investigators. Lipid management in patients with unstable angina pectoris and non-ST-segment elevation acute myocardial infarction (from CRUSADE). Am J Cardiol 2005 Feb 15;95(4):483-5. [PubMed](#)

Grundy SM, Cleeman JJ, Merz CN, Brewer HB Jr, Clark LT, Hunninghake DB, Pasternak RC, Smith SC Jr, Stone NJ. Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III guidelines. Circulation 2004 Jul 13;110(2):227-39. [45 references] [PubMed](#)

Krumholz HM, Anderson JL, Brooks NH, Fesmire FM, Lambrew CT, Landrum MB, Weaver WD, Whyte J, Bonow RO, Bennett SJ, Burke G, Eagle KA, Linderbaum J, Masoudi FA, Normand SL, Pina IL, Radford MJ, Rumsfeld JS, Ritchie JL, Spertus JA, American College of Cardiology, American Heart Association Task Force on Performance Measures, Writing Committee to Develop Performance Measures on ST-Elevation and non ST-Elevation MI. ACC/AHA clinical performance measures for adults with ST-elevation and non ST-elevation myocardial infarction. J Am Coll Cardiol 2006 Jan 3;47(1):236-65. [PubMed](#)

Shepherd J, Blauw GJ, Murphy MB, Bollen EL, Buckley BM, Cobbe SM, Ford I, Gaw A, Hyland M, Jukema JW, Kamper AM, Macfarlane PW, Meinders AE, Norrie J, Packard CJ, Perry IJ, Stott DJ, Sweeney BJ, Twomey C, Westendorp RG. Pravastatin in elderly individuals at risk of vascular disease (PROSPER): a randomised controlled trial. Lancet 2002 Nov 23;360(9346):1623-30. [PubMed](#)

Smith SC Jr, Blair SN, Bonow RO, Brass LM, Cerqueira MD, Dracup K, Fuster V, Gotto A, Grundy SM, Miller NH, Jacobs A, Jones D, Krauss RM, Mosca L, Ockene I, Pasternak RC, Pearson T, Pfeffer MA, Starke RD, Taubert KA. AHA/ACC guidelines for preventing heart attack and death in patients with atherosclerotic cardiovascular disease: 2001 Update. A statement for healthcare professionals from the American Heart Association and the American College of Cardiology. Circulation 2001 Sep 25;104(13):1577-9. [PubMed](#)

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Collaborative inter-organizational quality improvement
External oversight/Medicaid
External oversight/Medicare
Internal quality improvement

Application of Measure in its Current Use

CARE SETTING

Hospitals

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Measure is not provider specific

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Single Health Care Delivery Organizations

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

Each year 900,000 people in the United States (U.S.) are diagnosed with acute myocardial infarction (AMI); of these, approximately 225,000 cases result in death, and it is estimated that an additional 125,000 patients die before obtaining medical care.

EVIDENCE FOR INCIDENCE/PREVALENCE

American College of Cardiology, American Heart Association Task Force on Practice Guidelines, Committee on Management of Acute Myocardial Infarction. Ryan TJ, Antman EM, Brooks NH, Califf RM, Hillis LD, Hiratzka LF, Rapaport E, Riegel B, Russell RO, Smith EE III, Weaver WD. ACC/AHA guidelines for the management of patients with acute myocardial infarction: 1999 Update. Bethesda (MD): American College of Cardiology (ACC), American Heart Association (AHA); 1999. Various p.

ASSOCIATION WITH VULNERABLE POPULATIONS

Unspecified

BURDEN OF ILLNESS

Cardiovascular disease, including acute myocardial infarction (AMI), is the leading cause of death in the United States (U.S.).

See also the "Incidence/Prevalence" field.

EVIDENCE FOR BURDEN OF ILLNESS

French WJ. Trends in acute myocardial infarction management: use of the National Registry of Myocardial Infarction in quality improvement. Am J Cardiol 2000 Mar 9;85(5A):5B-9B; discussion 10B-12B. [PubMed](#)

UTILIZATION

Cardiovascular disease, including acute myocardial infarction (AMI), is the primary disease category for hospital patient discharges.

EVIDENCE FOR UTILIZATION

French WJ. Trends in acute myocardial infarction management: use of the National Registry of Myocardial Infarction in quality improvement. Am J Cardiol 2000 Mar 9;85(5A):5B-9B; discussion 10B-12B. [PubMed](#)

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

Discharges, 18 years of age and older, with a principal diagnosis of acute myocardial infarction (AMI)

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions

Discharges, 18 years of age and older, with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Principal Diagnosis Code for acute myocardial infarction (AMI) as defined in Appendix A, Table 1.1, of the original measure documentation

Exclusions

- Patients less than 18 years of age
- Patients who have a Length of Stay (LOS) greater than 120 days
- Patients with *Comfort Measures Only* documented
- Patients enrolled in clinical trials
- Patients discharged/transferred to another hospital for inpatient care
- Patients who left against medical advice or discontinued care
- Patients who expired
- Patients discharged/transferred to a federal health care facility
- Patients discharged/transferred to hospice
- Lipid-lowering medication as pre-arrival medication
- Patients with reason documented by a physician/advanced practice nurse/physician assistant (physician/APN/PA) for no low-density lipoprotein cholesterol (LDL-c) testing

RELATIONSHIP OF DENOMINATOR TO NUMERATOR

All cases in the denominator are equally eligible to appear in the numerator

DENOMINATOR (INDEX) EVENT

Clinical Condition
Institutionalization

DENOMINATOR TIME WINDOW

Time window brackets index event

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions

Acute myocardial infarction (AMI) patients with documentation of low-density lipoprotein cholesterol (LDL-c) level in the hospital record or documentation that LDL-c testing was done either during the hospital stay or is planned for after discharge

Exclusions

None

MEASURE RESULTS UNDER CONTROL OF HEALTH CARE PROFESSIONALS, ORGANIZATIONS AND/OR POLICYMAKERS

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

NUMERATOR TIME WINDOW

Episode of care

DATA SOURCE

Administrative data
Medical record

LEVEL OF DETERMINATION OF QUALITY

Individual Case

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a higher score

ALLOWANCE FOR PATIENT FACTORS

Unspecified

STANDARD OF COMPARISON

External comparison at a point in time
External comparison of time trends
Internal time comparison

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

Unspecified

Identifying Information

ORIGINAL TITLE

AMI-T1a: LDL-cholesterol assessment.

MEASURE COLLECTION

[National Hospital Inpatient Quality Measures](#)

MEASURE SET NAME

[Acute Myocardial Infarction](#)

SUBMITTER

Centers for Medicare & Medicaid Services
Joint Commission, The

DEVELOPER

Centers for Medicare & Medicaid Services/The Joint Commission

FUNDING SOURCE(S)

United States Government

COMPOSITION OF THE GROUP THAT DEVELOPED THE MEASURE

Centers for Medicare & Medicaid Services

FINANCIAL DISCLOSURES/OTHER POTENTIAL CONFLICTS OF INTEREST

Expert panel members have made full disclosure of relevant financial and conflict of interest information in accordance with the Conflict of Interest policies, copies of which are available upon written request to Centers for Medicare & Medicaid Services.

ADAPTATION

Measure was not adapted from another source.

RELEASE DATE

2000 Aug

REVISION DATE

2009 Oct

MEASURE STATUS

This is the current release of the measure.

This measure updates a previous version: Specifications manual for national hospital quality measures, version 2.6b. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2008 Oct. various p.

SOURCE(S)

Specifications manual for national hospital inpatient quality measures, version 3.0c. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct 1. various p.

MEASURE AVAILABILITY

The individual measure, "AMI-T1a: LDL-Cholesterol Assessment," is published in "Specifications Manual for National Hospital Inpatient Quality Measures." This document is available from [The Joint Commission Web site](#). Information is also available from the [Centers for Medicare & Medicaid Services \(CMS\) Web site](#). Check The Joint Commission Web site and CMS Web site regularly for the most recent version of the specifications manual and for the applicable dates of discharge.

COMPANION DOCUMENTS

The following are available:

- A software application designed for the collection and analysis of quality improvement data, the CMS Abstraction and Reporting Tool (CART), is available from the [CMS CART Web site](#). Supporting documentation is also available. For more information, e-mail CMS PROINQUIRIES at proinquiries@cms.hhs.gov.
- The Joint Commission. A comprehensive review of development and testing for national implementation of hospital core measures. Oakbrook Terrace (IL): The Joint Commission; 40 p. This document is available from [The Joint Commission Web site](#).
- The Joint Commission. Attributes of core performance measures and associated evaluation criteria. Oakbrook Terrace (IL): The Joint Commission; 5 p. This document is available from [The Joint Commission Web site](#).

NQMC STATUS

This NQMC summary was originally completed by ECRI on October 6, 2005. This NQMC summary was updated by ECRI Institute on April 16, 2007, October 26, 2007, and November 11, 2008. The Joint Commission informed NQMC that this measure was updated on August 13, 2008 and provided an updated version of the NQMC summary. This NQMC summary was updated by ECRI Institute on November 11, 2008. The information was verified by the Centers for Medicare & Medicaid Services on January 22, 2009. The Joint Commission informed NQMC that this measure was updated on October 1, 2009 and provided an updated version of the NQMC summary. This NQMC summary was updated by ECRI Institute on November 25, 2009. The information was verified by the Centers for Medicare & Medicaid Services on February 18, 2010.

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